
NASA
EPISODE ONE:
SEEING THROUGH SMOKE

1
00:00:01,400 --> 00:00:02,880
NASA.

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00:00:02,880 --> 00:00:07,280
The Agency that landed on the moon, launched the Hubble Space Telescope,

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00:00:07,280 --> 00:00:12,170
and took the first rover selfie? Yeah, that NASA.

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00:00:12,170 --> 00:00:14,720
We also chase fires.

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00:00:17,450 --> 00:00:21,740
NASA Explorers

6
00:00:22,920 --> 00:00:26,060
Introducing Season Three

7
00:00:26,060 --> 00:00:28,320
Fires

8
00:00:28,320 --> 00:00:32,400
This team is in the middle of a recovery operation.

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00:00:32,400 --> 00:00:35,570
The California Department of Forestry and Fire Protection

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00:00:35,570 --> 00:00:39,250
is using NASA satellite data to map the path of destruction

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00:00:39,250 --> 00:00:41,860
after the 2018 Camp Fire.

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00:00:41,860 --> 00:00:44,740
NASA has the tallest fire towers.

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00:00:44,740 --> 00:00:46,790

With our satellites looking down from space,

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00:00:46,790 --> 00:00:49,130
catching images every day and every night,

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00:00:49,130 --> 00:00:53,500
were often the first to detect and then share information about fires,

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00:00:53,500 --> 00:00:56,250
especially fires that are burning in remote locations.

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00:00:56,250 --> 00:00:59,900
That's where we can come in and provide a much better picture.

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00:00:59,900 --> 00:01:03,150
and so I have NASA MODIS and VIIRS stuff

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00:01:03,150 --> 00:01:05,460
which we always use on Google Earth

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00:01:05,460 --> 00:01:07,370
You can kinda see the streets here.

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00:01:07,370 --> 00:01:09,490
This is a neighborhood - totally burned down.

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00:01:09,490 --> 00:01:14,560
A NASA rapid response grant allowed the team to study the impact of the Camp Fire

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00:01:14,560 --> 00:01:17,580
just four months after it was contained.

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00:01:17,580 --> 00:01:23,240
NASA provides crucial tools for both first responders and fire recovery managers.

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00:01:23,240 --> 00:01:28,260
But there are even bigger implications for understanding the future of fire.

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00:01:28,260 --> 00:01:33,810
The information we collect from satellites helps us understand not just when are where fires are burning,

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00:01:33,810 --> 00:01:38,640
but what kind of changes they're making to the ecosystems on the ground and our atmosphere up above.

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00:01:38,640 --> 00:01:41,780
I'm Doug Morton and I'm a Earth System Scientist,

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00:01:41,780 --> 00:01:44,050
here at NASA's Goddard Space Flight Center.

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00:01:45,100 --> 00:01:49,760
Doug is one NASA's go-to scientists when it comes to making sense of how fires

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00:01:49,760 --> 00:01:52,420
effect people and ecosystems.

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00:01:52,420 --> 00:01:55,820
You need three things to make a fire.

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00:01:55,820 --> 00:02:01,440
You something to burn, you need climate conditions that allow that fire to start and grow large,

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00:02:01,440 --> 00:02:03,720
and you need a source of ignition.

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00:02:03,720 --> 00:02:06,590
Today, the source of ignition is almost always humans.

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00:02:08,500 --> 00:02:12,940
We can use information about rainfall and climate to anticipate landscapes

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00:02:12,940 --> 00:02:14,730
that might be come flammable in the future.

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00:02:14,730 --> 00:02:20,620

That kind of predictive power, how we harness our understanding of the Earth’s system, has really helped us m

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00:02:20,620 --> 00:02:25,170
in terms of anticipating and minimizing the risk to landscapes that might be flammable

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00:02:25,170 --> 00:02:29,000
next week, or even next season.

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00:02:29,000 --> 00:02:32,020
But the real work of science, may be something that

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00:02:32,020 --> 00:02:35,030
many people don’t have a lot of visibility into.

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00:02:35,030 --> 00:02:39,790
When we talk about taking a team of scientists and putting them into the field,

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00:02:39,790 --> 00:02:45,420
that can mean weeks, months, or even years of collecting data.

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00:02:45,420 --> 00:02:50,280
The first time I spent in the Amazon was in the early 2000’s,

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00:02:50,280 --> 00:02:54,630
just at the peak of deforestation rates in Brazil.

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00:02:54,630 --> 00:02:59,110
And I don’t think anyone could make it to the end of the frontier landscape,

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00:02:59,110 --> 00:03:05,780
standing at the edge of a road and looking in all directions and seeing towering columns of black smoke

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00:03:05,780 --> 00:03:10,390
and not feel like there was an opportunity to be careful with our planet.

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00:03:11,400 --> 00:03:13,850
Fires have been burning across the southern Amazon,

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00:03:13,850 --> 00:03:16,550
an area I've been working in for the last twenty years.

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00:03:16,550 --> 00:03:20,330
And so, people have looked to me to explain is this normal?

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00:03:20,330 --> 00:03:24,510
One of the things I can do as a NASA scientist is, I can go back in time.

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00:03:24,510 --> 00:03:29,210
Our data record allows us to literally compare actives that are happening everyday

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00:03:29,210 --> 00:03:33,710
with these same days and same kinds of conditions, previous years.

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00:03:35,160 --> 00:03:38,870
From space, we're mapping fires across the entire planet

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00:03:38,870 --> 00:03:41,950
and that often takes us to remote locations.

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00:03:41,950 --> 00:03:45,000
And the best way to partner and understand those remote locations is

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00:03:45,000 --> 00:03:48,690
with people who live and work in those communities.

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00:03:48,690 --> 00:03:50,550
So, that's what we did.

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00:03:50,550 --> 00:03:56,920
This year NASA is sending a blitz of missions into the field and you're coming with us.

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00:03:56,920 --> 00:04:02,230
Climate change is shepherding in a new era of fires that burn hotter and longer.

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00:04:02,230 --> 00:04:07,180

And our pilots. Our partners. Our scientist and engineers?

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00:04:08,160 --> 00:04:11,030
They’ve come prepared to meet the challenge.

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00:04:19,570 --> 00:04:13,150
NASA Explorers

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00:04:19,570 --> 00:04:24,650
Some of my days have been 14, 16 and 18 hours.

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00:04:24,650 --> 00:04:30,070
We don't hesitate to meet challenging conditions.